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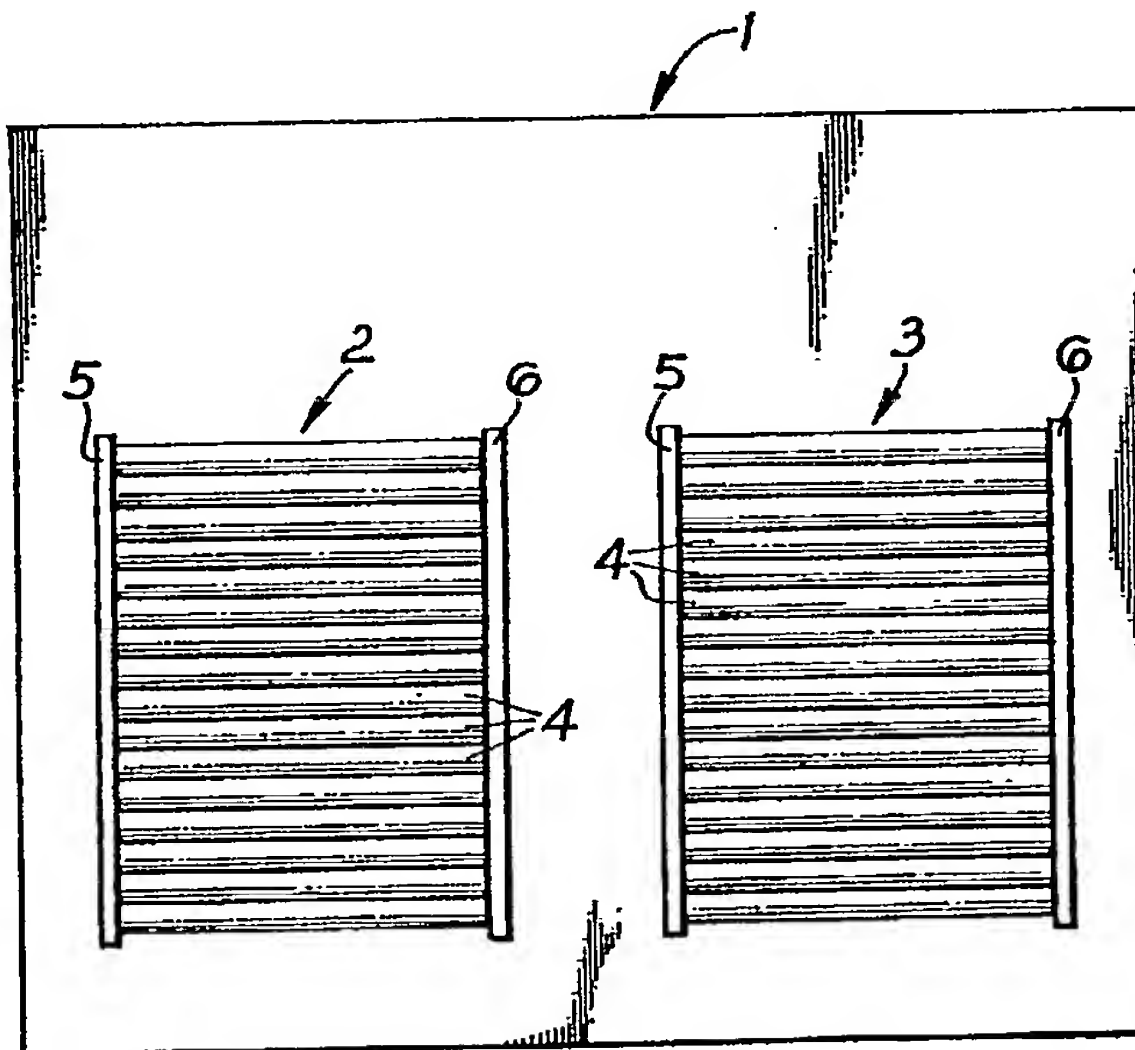
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(54) Vehicle mud flap

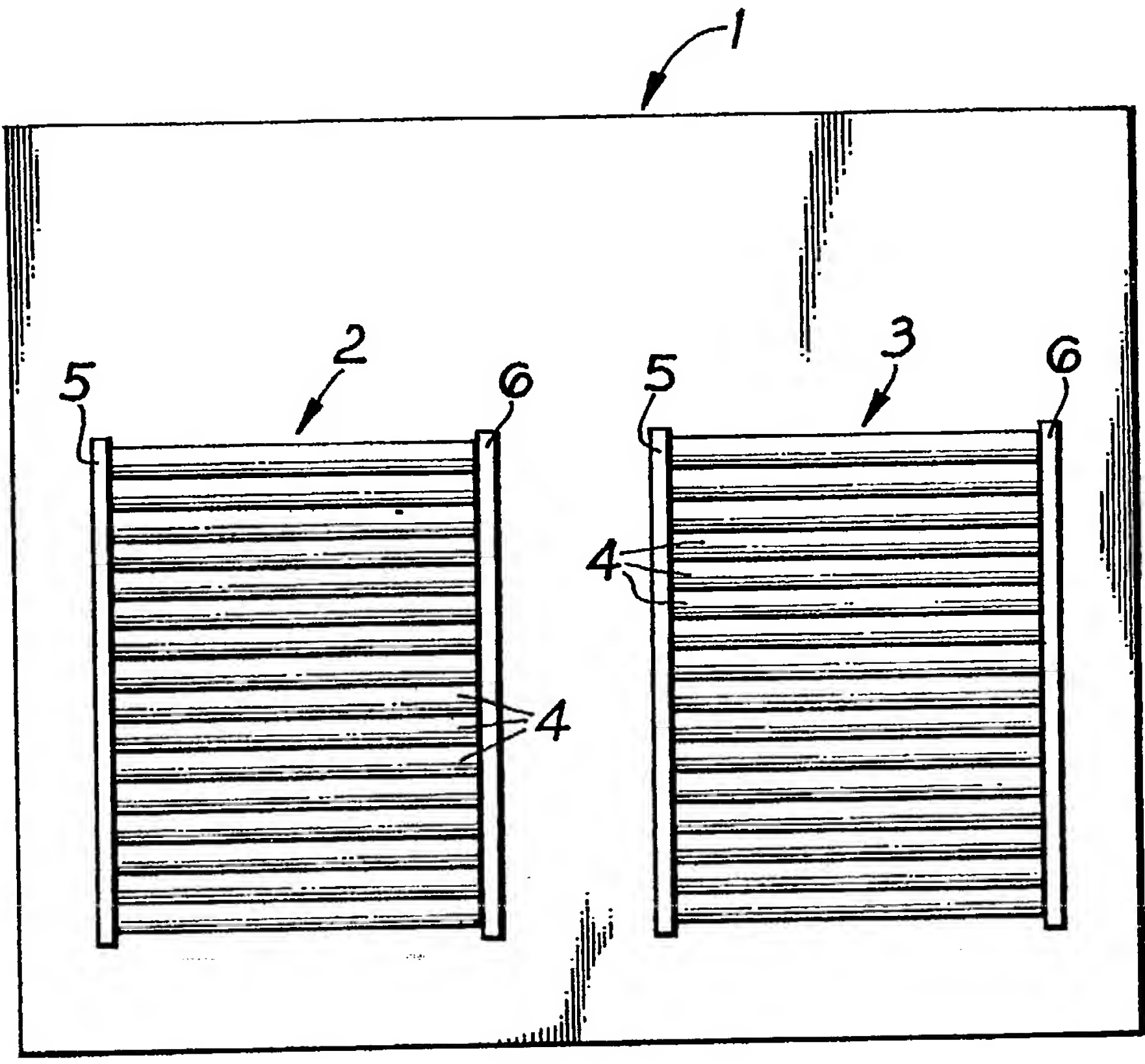
(57) A spray-reducing mud flap has at least one roller in its surface. Preferably the mud flap has a plurality of parallel rollers, which may rotate freely or may be driven to cause them to rotate and which may be intermeshed with each other.



The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

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SPECIFICATION

Mud flap

5 The invention is a new mud flap, devised with the object of reducing the spray arising from vehicle wheels, especially those of commercial vehicles.

The spray thrown up from wet roads by fast-moving vehicles is at best a nuisance to any following vehicle and at worst a serious traffic hazard. In particular, as commercial vehicles become larger and faster, and as the number and size of wheels on a vehicle increase, the volume of spray is such that conventional mud flaps in the form of simple hanging sheets of flexible material are no longer able to cope adequately with normal requirements.

Thus we are aware of an increasing demand in recent years for an improved mud flap. So far as we are aware, no suitable mud flap has been devised which deals with the problem adequately and reliably. It has therefore been our object, in making our invention, to devise a mud flap which is better than such earlier mud flaps in reducing or suppressing vehicle spray.

The mud flap according to the present invention is characterised by having at least one roller in its surface.

While we do not wish to be limited by any particular theory of operation, it would seem that the most effective way of dealing with the water thrown up by a rotating vehicle wheel is to receive it on a surface which absorbs its momentum.

Conventional mud flaps may actually contribute to the spray by breaking up larger droplets of water and throwing off the resulting finer droplets from the sides of the flap. In contrast to this, our novel mud flap receives the water, at least in part, on a rotatable or rotating roller surface, absorbs some at least of its momentum without directly reflecting the water, and allows the water to run off from the bottom of the flap on to the road surface.

Thus some beneficial effect is obtained if our mud flap carries a single roller. However, it is much preferred that our mud flap should have two or more rollers. The rollers may be spaced apart from each other in the surface of the mud flap but, in a particularly preferred form, we use a plurality of parallel rollers in close alignment.

Preferably the individual rollers are each formed as a single continuous roller or alternatively in two axially aligned halves. However, it is also possible to form each roller of several pieces, so that each roller resembles a number of beads on a common axis.

The roller or rollers are preferably made of a durable material able to withstand a considerable amount of rough treatment and resistant to rotary wear. Thus they may be of metal, for example steel, or of a resistant plastics material. Their effectiveness and durability may both be aided by using a roller coated with a thin layer of low-friction material, for example poly(tetrafluoroethylene), PTFE.

The roller or rollers may be mounted free-running or may be meshed with one or more other rollers or may be driven. Thus in one form of our invention,

the mud flap carries a plurality of parallel rollers mounted so as to be free to rotate and in close alignment.

The rollers may be plain surfaced or may have surface features assisting rotation. For example, rotation may be assisted by a continuous or interrupted spiral projection from the surface of a roller or by ribs parallel to the roller axis.

If desired, several or all of the rollers may be inter-meshed as by gear wheels at the ends of their axes. Thus adjacent rollers may rotate in alternate directions or the gearing may be such that all of the rollers rotate in the same direction.

The rollers may, if desired, be specifically driven although we have already achieved very good results with free-running rollers. Any such drive to the rollers may be provided by an electric motor associated therewith or by an air motor, which may be driven, in the case of a goods vehicle, from the vehicle air pressure system. In the latter case, the air is preferably used in a closed circuit to avoid any loss of vehicle air pressure.

The material of the mud flap itself need not differ from that of conventional mud flaps. In the case of heavy commercial vehicles in particular, this implies the use of a heavy flexible material, able to flex upon impact but not too readily distorted by normal use. Thus rubber, natural or synthetic, or rubberised fabric is most readily used.

The one or more rollers may be set upon the surface of the mud flap, that is not penetrating the thickness of the flap, but in general it is convenient and advantageous for the rollers to extend through from one face of the flap to the other.

The mud flap may be of such a dimension as to deal with the spray from a single vehicle wheel but may with advantage extend across the width of say two wheel on a common axle. In this latter case, the rollers may themselves extend across both wheels or the mud flap may have one or more rollers for each wheel.

Our invention will now be further described with reference to the accompanying drawing, which illustrates in elevation a mud flap of our invention designed to cover two adjacent wheels.

In the drawing the mud flap designated generally by the numeral 1 is of heavy rubberised material conventionally used. Two panels, 2 and 3, of parallel rollers are incorporated in the mud flap and extend through the depth of the flap from one face to the other. The panels 2 and 3 are identical and are so sized (that is, each about 8 inches in width) and so spaced (about 3 inches apart at their nearest points) as to align generally with a pair of vehicle wheels on a common axle.

Each panel, 2 and 3, is formed from a plurality (in the illustrated embodiment sixteen) of aligned steel rollers 4. Each roller has a steel pin projecting axially at each end and the pins are retained in steel sections 5, 6, leaving each roller 4 free to rotate independently of the next one.

In experimental trials, we have found that the illustrated mud flap effectively reduces the amount of spray, visually assessed as by about 50 per cent, as compared with a conventional, plain mud flap of

the same size.

CLAIMS

- 5 1. A mud flap for a vehicle, characterised by having at least one roller in its surface.
2. A mud flap as claimed in claim 1, having two or more rollers.
3. A mud flap as claimed in claim 2, having a plurality of parallel rollers in close alignment.
- 10 4. A mud flap as claimed in any preceding claim, wherein each roller is formed of two or more axially aligned pieces.
5. A mud flap as claimed in any preceding claim, wherein the roller or rollers are of metal or a wear-resistant plastics material.
- 15 6. A mud flap as claimed in any preceding claim, wherein the roller or rollers are coated with a thin layer of poly (tetrafluoroethylene).
- 20 7. A mud flap as claimed in any preceding claim, having a plurality of parallel rollers mounted so as to be free to rotate and in close alignment.
8. A mud flap as claimed in any of claims 1 to 6, having a plurality of rollers intermeshed so as to rotate together.
- 25 9. A mud flap as claimed in any of claims 1 to 6 and 8, having a plurality of rollers which are driven to cause them to rotate.
10. A mud flap as claimed in any preceding claim, wherein the roller or rollers have surface features assisting rotation.
- 30 11. A mud flap as claimed in any preceding claim, wherein the roller or rollers extend through from one face of the flap to the other.
- 35 12. A mud flap as claimed in any preceding claim, of such a dimension as to extend across the width of two wheels and having one or more rollers for each wheel.
13. A mud flap for a vehicle, being of rubber or of rubberised fabric and having in its surface at least one set of parallel rollers, said rollers being mounted so as to be free to rotate and in close alignment.
- 40 14. A mud flap for a vehicle, substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.
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